

Unit 15

Day 1

Synthetic Division

Review: $(x^3 + 4x^2 - 2x - 12) \div (x + 3)$

$$\begin{array}{r} -3 \overline{) 1 \ 4 \ -2 \ -12} \\ \underline{-3 \ -3 \ 15} \\ 1 \ 1 \ -5 \ 3 \end{array}$$
$$x^2 + x - 5 + \frac{3}{x+3}$$

Ex1: Using synthetic division

$$(x^3 + 4x^2 - 2x - 12) \div (x + 3)$$

$$\begin{array}{r|l} -3 & \end{array}$$

Synthetic division may only be used when dividing by a linear binomial in the form of $x - k$.

Ex2: Write your answer using the division Algorithm

$$(x^4 - 5x^2 - 10x + 12) \div (x - 2) =$$

$$\begin{array}{r|rrrrrr} 2 & 1 & 0 & -5 & -10 & 12 \\ & & 2 & 4 & -2 & -24 \\ \hline & 1 & 2 & -1 & -12 & -12 \\ & x^3 & +2x^2 & -x & -12 & -\frac{12}{x-2} \end{array}$$

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